

What is claimed is:

1. A semiconductor device, said device comprising:
 - a) an interposer having two major surfaces wherein the first surface includes patterned metal conductors and bond pads and the second surface includes an array of solder balls;
 - b) a semiconductor chip having a top surface and a back surface, said back surface of said chip adjacent said interposer, and said top surface comprising a plurality of terminals;
 - c) a layer of polymeric material disposed on said first surface of the interposer covering the area of the interposer over the solder ball array, at least a portion of said polymeric material layer between said chip and said interposer; and
 - d) a plurality of electrical connections between said chip terminals and said bond pads on the interposer.
2. The device of claim 1 wherein the area of said chip is smaller than the area of said solder ball array.
3. The device of claim 1 wherein said interposer comprises a flexible film.
4. The device of claim 1 wherein said interposer comprises a thin laminate.

5. The device of claim 1 wherein said interposer comprises a thin composite material.

6. The device of claim 1 wherein the elastic modulus of said layer of polymeric material is in the range of about 1 to about 15 GPa.

7. The device of claim 1 wherein the thickness of said layer of polymeric material is in the range of about 75 to about 200 microns.

8. The device of claim 1 wherein said polymeric material is thermally conductive.

9. The device of claim 1 wherein said polymeric material layer comprises a thermosetting paste.

10. The device of claim 1 wherein said polymeric material is a preformed film.

11. The device of claim 1 wherein said layer of polymeric material disposed on said first surface of said interposer comprises an insulator layer adjacent said interposer, and a metal filled polymer layer on said insulator layer.

12. The device of claim 1 wherein said electrical connections comprise gold bond wires.

13. The device of claim 1 wherein said solder balls are in a fully populated array on the interposer.

14. The device of claim 1 wherein the edges of said chip are positioned over one or more of said solder balls.

15. A semiconductor device, comprising:

a) an interposer having first and second major surfaces, wherein said first major surface includes patterned metal conductors and bond pads and the second major surface includes an array of solder balls connected to selected pads on the first surface;

b) a semiconductor chip comprising top and back surfaces and having an area smaller than the area of said solder ball array, said back surface of said chip adhered to said first major surface of said interposer, and said top surface of said chip including a plurality of terminals located on the top surface;

c) a plurality of polymeric structures disposed on said first major surface of the interposer, each of said polymeric structures over a solder ball location in said array of solder balls; and

d) a plurality of electrical connections between said chip terminals and said bond pads on the interposer.

16. The semiconductor device of claim 15 wherein the elastic modulus of polymeric structures is in the range of about 1 to about 15 GPa.

17. The semiconductor device of claim 15 wherein the thickness of said polymeric structures is in the range of about 75 to about 200 microns.

18. The semiconductor device of claim 15 wherein said polymeric structures are preformed on a dielectric film sized to cover said solder ball array.

19. A method for fabricating a semiconductor device, comprising the steps of:

providing an interposer having first and second surfaces, said first surface including patterned metal conductors and bond pads, and said second surface including a plurality of solder balls;

disposing on said first surface of said interposer a layer of polymeric material having an area sufficient to cover said plurality of solder balls;

providing a semiconductor chip having a top surface and a back surface, said top surface including a plurality of terminals;

mounting said chip on said polymeric material; and

connecting said bond pads on said interposer to said terminals on said chip.

20. The method of Claim 19 wherein said step of disposing a layer of polymeric material comprises disposing a layer of polymeric material having thickness in the range of about 75 microns to about 200 microns.